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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/058,104

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Keiichi Chihara

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EXAMINER

ALBERTALLI, BRIAN LOUIS

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,104

Applicant(s)

CHIHARA, KEIICHI

Examiner

Brian L. Albertalli

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-20 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendments to the claims have been entered. Claims 1 and 3 are currently amended and new claims 15-20 have been added.

Response to Arguments

2. Applicant's arguments filed April 20, 2006 have been fully considered but they are not persuasive.

Regarding claim 1, the Applicant argues that Otsuka teaches the speech production time T is based on the control data representing the speech production speed stored in the control data storage unit 2 (see page 13 of Applicant's arguments) and thus does not teach *designating an utterance speed*, as required by claim 1.

However, Otsuka discloses that the control data storage unit 2 stores control data such as the speech production speed which has been inputted from a user interface (column 3, lines 30-34). The act of a user inputting a speech production speed through a user interface is equivalent to *designating an utterance speed*. Otsuka's teaching that the speech reproduction time T is based on control data representing the speech production speed stored in control data storage unit 2 (column 3, line 63 to column 4, line 2) does not mean that the speech production speed stored in control data storage unit 2 is some arbitrarily assigned speech production speed. Rather, the user's *designated* utterance speed is first stored in control data storage unit 2, then extracted from control

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data storage unit 2 to determine the speech production time T. The speech reproduction speed extracted, therefore, is a *designated* utterance speed.

Furthermore, regarding the argument that Otsuka does not disclose *selecting one of the duration rule table and the duration prediction table according to the utterance speed*, Otsuka discloses the user's designated utterance speed is used to determine the speech production time T (explained above). This production time is then used to determine the initial phoneme duration for each phoneme. That is, an initial phoneme production time is determined dependent on the total speech production time T (thereby determining an initial rate of speech, column 3, line 63 to column 4, line 2 and column 4, lines 15-17). If this initial phoneme production time is less than the empirically found phoneme durations (threshold values θ), the threshold values are used as the phoneme duration (column 6, lines 8-10). Otherwise, the durations predicted by statistical analysis are used (average value μ , standard deviation value σ , and minimum value d are used to set a phoneme duration with the most probable value, column 7, lines 22-27).

The selection between the *duration rule table* (threshold values θ) and the *duration prediction table* (average value μ , standard deviation value σ , and minimum value d) are therefore "based on" the user designated utterance speed. For example, a fast user designated utterance speed would produce a small speech production time T, which in turn would produce a small initial phoneme production time, and thus the selection of the empirically found phoneme durations (threshold values θ). Similarly, a slow user designated utterance

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speed would produce a large production time T , which in turn would produce a large initial phoneme production time, and thus the selection of the durations found by statistical analysis (average value μ , standard deviation value σ , minimum value d).

Regarding claim 3, as discussed above, Otsuka discloses *designating an utterance speed and selecting one of the duration rule table and the duration prediction table according to the utterance speed.*

Further, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this case, the Applicant's argument that Vermeulen et al. do not disclose *setting the pitch contour based on the threshold* (see Applicant's arguments, page 15) is not persuasive because Otsuka discloses selecting between a rule table and a statistical table based on a designated utterance speed. While Otsuka do not disclose that the rule table and statistical table contain pitch contour information, Vermeulen et al. disclose selecting between a rule table or statistical table in order to generate a pitch contour. It would have been obvious to one of ordinary skill in the art at the time of invention, therefore to base the selection of the rule table or statistical table disclosed by Vermeulen

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et al. based on a designated utterance speed, as disclosed by Otsuka, in order to realize a natural pitch contour regardless of the speech production time.

3. Therefore, for the reasons given above, the rejections of claims 1-4 are maintained.

Allowable Subject Matter

4. Claims 5-14 are allowed for the reasons given in the previous Office Action (mail date December 20, 2005).

5. Additionally, new claims 15-20 are allowed.

The following is an examiner's statement of reasons for allowance:

As indicated above in the Response to Arguments section, claims 1 and 3 simply require selecting a rule based table or statistical based table *based on* a user's designated utterance speed. However, independent claims 15 and 18 require *comparing the utterance speed with the threshold value* before selecting one of the duration rule table and duration prediction table according to an utterance speed. While Otsuka disclose selecting one of the duration rule table and duration prediction table "based on" the designated utterance speed (albeit indirectly), Otsuka does not teach or suggest comparing the user designated utterance speed directly to a determined threshold value prior to the selection of one of the of the duration rule table or duration prediction table.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in view of Otsuka (U.S. Patent 6,546,367).

The applicant's admitted prior art discloses a method of controlling high-speed reading in a text-to-speech conversion system including a text analysis module for generating a phoneme and prosody character string from an input text (Fig. 15, 101); a prosody generation module for generating a synthesis parameter of at least a voice segment, a phoneme duration, and a fundamental frequency for said phoneme and prosody character string (Fig. 16); a voice segment dictionary in which voice segments as a source of voice are registered (Fig. 15, 105); and a speech generation module for generating a synthetic

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waveform by waveform superimposition by referring to said voice segment dictionary (Fig. 15, 103).

Applicant's admitted prior art does not disclose:

designating an utterance speed;

selecting one of the duration rule table and the duration prediction table according to the utterance speed; and

the step of providing said prosody generation module with a phoneme duration determination unit that includes both a duration rule table containing empirically found phoneme durations and a duration prediction table containing phoneme durations predicted by statistical analysis and determines a phoneme duration by using, when a user-designated utterance speed exceeds a maximum utterance speed threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table.

Otsuka discloses a method comprising the steps of:

designating an utterance speed (column 3, lines 30-34);

selecting one of the duration rule table and the duration prediction table according to the utterance speed (see Response to Arguments section above); and

providing said prosody generation module with a phoneme duration determination unit (Fig. 2, phoneme duration setting unit 5) that includes both a duration rule table containing empirically found phoneme durations (Fig. 4, threshold values θ) and a duration prediction table containing phoneme durations predicted by statistical analysis (Fig. 4, average value μ , standard

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deviation value σ , and minimum value d) and determines a phoneme duration by using, when a user-designated utterance speed exceeds a threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table.

See Figure 5. In step 107, an initial phoneme production time is determined dependent on the total speech production time T (thereby determining an initial rate of speech, column 3, line 63 to column 4, line 2 and column 4, lines 15-17). If this initial phoneme production time is less than the empirically found phoneme durations (threshold values θ), the threshold values are used as the phoneme duration (column 6, lines 8-10). Otherwise, the durations predicted by statistical analysis are used (average value μ , standard deviation value σ , and minimum value d are used to set a phoneme duration with the most probable value, column 7, lines 22-27). The threshold values used are necessarily the maximum utterance speed, because any initial phoneme duration that is less than the threshold duration will be set to the threshold duration (producing speech at the minimum phoneme duration is equivalent to producing speech at the maximum utterance speed).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the applicant's admitted prior art to use, when a user-designated utterance speed exceeds a threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table, in order to realize a natural phoneme duration regardless of the speech production time (utterance speed), as taught by Otsuka (column 14, lines 30-34).

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in view of Otsuka, and further in view of Vermeulen et al. (U.S. Patent 6,810,379).

As discussed in reference to claim 1, above, the applicant's admitted prior art discloses all of the features of the instant claims, except:

designating an utterance speed;

selecting one of the duration rule table and the duration prediction table according to the utterance speed; and

the step of providing said prosody generation module with a pitch contour determination unit that has both an empirically found rule table and a prediction table predicted by statistical analysis and determines a pitch contour by determining both accent and phrase components with, when a user-designated utterance speed exceeds a maximum utterance speed threshold, said pitch contour rule table and, when said threshold is not exceeded, said pitch contour prediction table.

Otsuka discloses designating an utterance speed (column 3, lines 30-34);

selecting one of the duration rule table and the duration prediction table according to the utterance speed (see Response to Arguments section above); and

a method of switching between a statistical table and a rule-based table depending on the selected utterance speed (Fig. 5).

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Neither the applicant's admitted prior art nor Otsuka disclose using those tables to determine a pitch contour.

Vermeulen et al. disclose that text-to-speech systems can use both rule based and statistical models (column 2, lines 10-11).

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the combination of the applicant's admitted prior art and Otsuka to include a statistical table and a rule table for the pitch contour, and to use the rule table when a maximum utterance speed threshold had been exceeded, in order to realize a natural pitch contour regardless of the speech production time (utterance speed).

Conclusion


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Albertalli whose telephone number is (571) 272-7616. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BLA 6/28/06



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